

CLAIMS

1. An optical recording medium comprising:

a disc-like shaped support substrate including an

5 information recording face at least on one side; and

a light transmitting resin layer formed on the support substrate on the information recording face side, wherein

an annular convex portion projecting in a thickness direction so as to surround a center axis line of the support
10 substrate is formed on the resin layer, and the resin layer is extended to inside of the annular convex portion in a radial direction.

2. The optical recording medium according to claim 1,

15 wherein

the annular convex portion is integrally formed with the resin layer.

3. The optical recording medium according to claim 1 or 2,

20 wherein

the resin layer is formed so that a thickness of an inner part inside the annular convex portion in the radial direction is smaller than that of an outer part outside the annular convex portion in the radial direction.

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4. The optical recording medium according to claim 1 or 2,
wherein

the resin layer is formed so that a thickness of an inner
part inside the annular convex portion in the radial direction
5 becomes smaller toward inside in the radial direction.

5. The optical recording medium according to claim 3,
wherein

the resin layer is formed so that a thickness of the
10 inner part inside the annular convex portion in the radial
direction becomes smaller toward inside in the radial
direction.

6. The optical recording medium according to claim 1 or 2,
15 wherein

the annular convex portion is formed in a circular ring
shape concentric with the support substrate.

7. The optical recording medium according to claim 3,
20 wherein

the annular convex portion is formed in a circular ring
shape concentric with the support substrate.

8. The optical recording medium according to claim 4,
25 wherein

the annular convex portion is formed in a circular ring shape concentric with the support substrate.

9. The optical recording medium according to claim 5,

5 wherein

the annular convex portion is formed in a circular ring shape concentric with the support substrate.

10. The optical recording medium according to claim 1 or

10 2, wherein

the annular convex portion is formed intermittently in a circumferential direction.

11. The optical recording medium according to claim 3,

15 wherein

the annular convex portion is formed intermittently in a circumferential direction.

12. The optical recording medium according to claim 4,

20 wherein

the annular convex portion is formed intermittently in a circumferential direction.

13. The optical recording medium according to claim 5,

25 wherein

the annular convex portion is formed intermittently in a circumferential direction.

14. The optical recording medium according to claim 1 or
5 2, wherein

the support substrate has a stepwise shape with a step on the information recording face along the annular convex portion.

10 15. The optical recording medium according to claim 3, wherein

the support substrate has a stepwise shape with a step on the information recording face along the annular convex portion.

15 16. The optical recording medium according to claim 4, wherein

the support substrate has a stepwise shape with a step on the information recording face along the annular convex
20 portion.

17. A method for manufacturing an optical recording medium, comprising:

a spreading step of approximately horizontally placing a
25 disc-like shaped support substrate including an information

recording face at least on one side so that the information recording face is oriented upward and supplying a light transmitting radiation curable resin having in a flowing state to the vicinity of a center of the information recording face while rotationally driving the support substrate, thereby allowing the radiation curable resin to flow outward in a radial direction by centrifugal force so as to be spread on the information recording face;

a first curing step of radiating a radiation ray exclusively to an outer area outside a predetermined concentric inner area on the information recording area in the radial direction while the support substrate is being rotated to increase its viscosity and cure the extended radiation curable resin, and restricting a radial flow of the radiation curable resin in an uncured state within the inner area in the vicinity of an outer circumference of the inner area so as to allow the radiation curable resin to flow and project in a thickness direction along the outer circumference of the inner area to cure the radiation curable resin, thereby integrally forming an outer part of the light transmitting resin layer and an annular convex portion; and

a second curing step of radiating a radiation ray at least to the inner area so as to cure the radiation curable resin in an uncured state within the inner area , thereby integrally forming an inner part inside the annular convex

portion in the radial direction as a part of the resin layer with the annular convex portion and the outer part.

18. A method for manufacturing an optical recording

5 medium, comprising:

a spreading step of approximately horizontally placing a disc-like shaped support substrate including an information recording face at least on one side so that the information recording face is oriented upward and supplying a light

10 transmitting radiation curable resin in a flowing state to the vicinity of a center of the information recording face while rotating the support substrate, thereby allowing the radiation curable resin to flow outward in a radial direction by centrifugal force so as to be spread on the information
15 recording face;

a first curing step of radiating a radiation ray exclusively to an outer area outside a predetermined concentric inner area on the information recording face in the radial direction in any one of a state where the support
20 substrate is stopped rotating and a state where the support substrate is rotated in a lower speed of revolution than that at the spreading step so as to cure the extended radiation curable resin, thereby forming an outer part of a light transmitting resin layer;

25 a second curing step of radiating a radiation ray

exclusively to the outer area while the support substrate is being rotated and at least to an area in the vicinity of an outer circumference of the inner area so as to restrict a radial flow of the radiation curable resin in an uncured state within the inner area in the vicinity of the outer circumference of the inner area so as to allow the radiation curable resin to flow and project in a thickness direction along the outer circumference of the inner area and cure the radiation curable resin, thereby forming an annular convex portion integrally with an outer part of the resin layer; and

a third curing step of radiating a radiation ray at least to the inner area so as to cure the radiation curable resin in an uncured state within the inner area, thereby integrally forming an inner part inside the annular convex portion in the radial direction as a part of the resin layer with the annular convex portion and the outer part.

19. The method for manufacturing an optical recording medium according to claim 17 or 18, wherein

the inner area is shielded by a shielding mask so as to radiate the radiation ray exclusively to the outer area.

20. The method for manufacturing an optical recording medium according to claim 17 or 18, wherein

the radiation curable resin is supplied again to the

inner area after the first curing step.

21. The method for manufacturing an optical recording medium according to claim 19, wherein

5 the radiation curable resin is supplied again to the inner area after the first curing step.

22. A method for manufacturing an optical recording medium, comprising:

10 a spreading step of approximately horizontally placing a disc-like shaped support substrate including an information recording face at least on one side so that the information recording face is oriented upward and supplying a light transmitting radiation curable resin in a flowing state to the vicinity of a center of the information recording face while rotating the support substrate, thereby allowing the radiation curable resin to flow outward in a radial direction by centrifugal force so as to be spread on the information recording face;

20 a first curing step of radiating a radiation ray to a predetermined concentric inner area on the information recording face and an outer area outside the inner area in the radial direction so as to cure the extended radiation curable resin, thereby forming a light transmitting resin layer;

25 an annular convex portion formation step of discharging a

radiation curable resin in an annular manner along an outer circumference of the inner area to form an annular convex portion on the resin layer; and

5 a second curing step of radiating a radiation ray at least along the outer circumference of the inner area to cure the annular convex portion.

23. A manufacturing device of an optical recording medium, comprising:

10 rotation device for rotating a disc-like shaped support substrate including an information recording face at least on one side while approximately horizontally supporting the support substrate so that the information recording face is oriented upward;

15 radiation curable resin supply device for supplying a light transmitting radiation curable resin in a flowing state to the vicinity of a center of the information recording face of the support substrate; and

20 irradiation device capable of radiating a radiation ray to a predetermined concentric inner area on the information recording face and of radiating the radiation ray exclusively to an outer area outside the inner area in a radial direction.